

Claims

1. A film for forming a bag with a lap seal, a top seal and a bottom seal, the film comprising:
 - a seal layer, wherein the seal layer includes metallocene catalyzed polyethylene,
 - a barrier layer opposite from the seal layer such that seal layer and the barrier layer provide opposing exterior surfaces of the film,
 - a peel layer positioned between the seal layer and the barrier layer,
 - wherein the seal layer has a seal layer melting point and the barrier layer has a barrier layer melting point that is higher than the seal layer melting point,
 - wherein the seal layer is capable of sealing to the barrier layer at a temperature below the barrier layer melting point, to enable the lap seal to be formed between the barrier layer and the seal layer when the film is formed into a bag, and
 - wherein the seal layer is capable of sealing to itself at a temperature below the barrier layer melting point.
2. The film as recited in claim 1, wherein the peel layer comprises polybutene and a matrix polymer.
3. The film as recited in claim 1, wherein the peel layer comprises mineral filler and a matrix polymer.
4. The film as recited in claim 1, wherein the peel layer comprises styrene-butadiene and a matrix polymer.
5. The film as recited in claim 1, wherein the peel layer comprises ionomer and a matrix polymer.

6. The film as recited in claim 1, wherein the peel layer comprises polypropylene and a matrix polymer.

7. The film as recited in claim 1, wherein the barrier layer contains a polymer selected from the group consisting of high density polyethylene and polypropylene.

8. The film as recited in claim 1, wherein the barrier layer contains high density polyethylene, and wherein the high density polyethylene is a homopolymer of ethylene.

9. The film as recited in claim 3, wherein the high density polyethylene has a density of at least about 0.940 g/cm^3 .

10. The film as recited in claim 1, wherein the barrier layer provides the film with a moisture vapor transmission rate of less than about $0.25 \text{ g/100 in}^2/24 \text{ hours}$ at 100° F/90\% relative humidity.

11. The film as recited in claim 1, wherein the peel layer is adapted to enable the film, when sealed to itself, to be pulled apart with the application of less than about 2 pounds per inch of force.

12. A film for forming a bag with a lap seal, a top seal and a bottom seal, the film comprising:

a seal layer, wherein the seal layer includes single site catalyzed polyethylene,

a barrier layer opposite from the seal layer such that seal layer and the barrier layer provide opposing exterior surfaces of the film,

a peel layer positioned between the seal layer and the barrier layer, wherein the peel layer comprises a matrix resin and polybutene in an amount greater than 15%;

wherein the seal layer has a seal layer melting point and the barrier layer has a barrier layer melting point that is higher than the seal layer melting point,

wherein the seal layer is capable of sealing to the barrier layer at a temperature below the barrier layer melting point, to enable the lap seal to be formed between the barrier layer and the seal layer when the film is formed into a bag, and

wherein the seal layer is capable of sealing to itself at a temperature below the barrier layer melting point.

13. The film as recited in claim 12, wherein the peel layer comprises polybutene in an amount that is greater than 15% and no more than about 30% by weight of the peel layer.

14. The film as recited in claim 12, wherein the peel layer comprises polybutene in an amount ranging from about 16% to about 20% by weight of the peel layer.

15. The film as recited in claim 12, wherein the matrix resin in the peel layer is polyethylene.

16. The film as recited in claim 12, wherein the polymer matrix in the peel layer is low density polyethylene.

17. A bag comprising:
a film comprising a peel layer between a seal layer and a barrier layer, the peel layer comprising a matrix resin and peel agent,

wherein the bag is configured such that the barrier layer of the film is the exterior surface of the bag and the seal layer is the interior surface of the bag,

wherein the bag has a top seal, a bottom seal and a lap seal extending between the top seal and the bottom seal,

wherein the seal layer and the barrier layer have compositions that enable the lap seal to be formed by sealing a portion of the seal layer at one end of the film to a portion of the barrier layer at an opposing end of the film,

wherein the seal layer is capable of sealing to itself at a temperature below the barrier layer melting point, and

wherein the seal layer and barrier layer are capable of forming a lap seal that is resistant to being opened along its length when the top seal of the bag is opened.

18. The bag recited in claim 17, wherein the seal layer comprises single site catalyzed ethylene alpha olefin copolymer.

19. The bag recited in claim 17, wherein the barrier layer contains a polymer selected from the group consisting of high density polyethylene and polypropylene.

20. The bag recited in claim 17, wherein the bag may be opened with the application of force less than about 2 pounds per inch.

21. A method of forming a bag with a form/fill/seal apparatus, the method comprising:

providing a film having a peel layer positioned between a seal layer and a barrier layer, wherein the film has a first edge and a second edge;

configuring the film such that the barrier layer of the film forms the exterior surface of the bag and the seal layer forms the interior surface of the bag,

forming a bottom seal,

forming a lap seal by sealing the seal layer along the first edge of the film to the barrier layer along the second edge of the film,

forming a top seal,

wherein the seal layer and the barrier layer have compositions that enable the seal layer to seal to the barrier layer, and

wherein the peel layer enables the top seal to be opened without also opening the lap seal along its length.

22. The method as recited in claim 21, wherein the barrier layer contains a polymer selected from the group consisting of high density polyethylene and polypropylene.